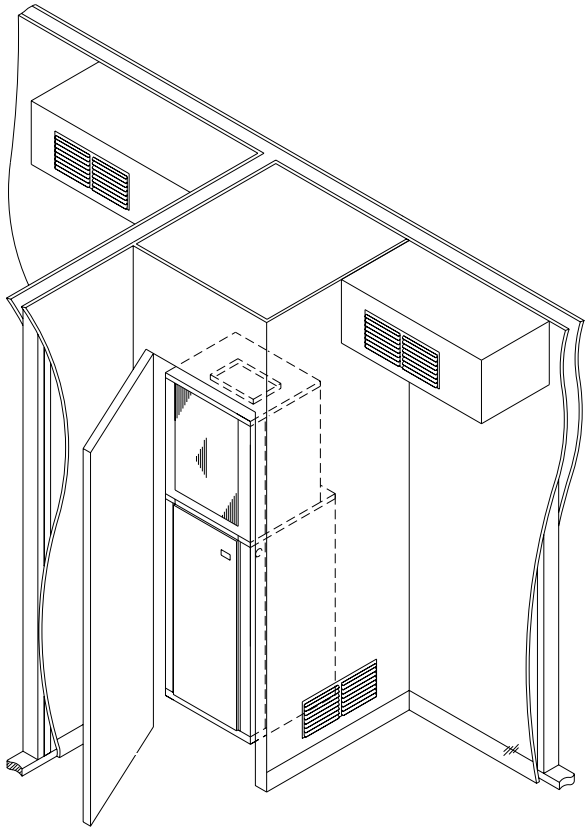
S P V U

Single Package Vertical Air Conditioner/Heat Pump

Installation Instructions and Owner's Manual

VTC/VTH Series



The **Single Package Vertical Unit** is a compact, through the wall packaged HVAC system that can be ducted to individual rooms. It's slim 20" wide design uses minimal floor space and installs in a closet having an exterior wall. Conditioned air from a single unit can be ducted to multiple rooms. Each unit is controlled by a standard wall thermostat.

These instructions give information relative to the SPVU unit only. Refer to Wall Sleeve and Grille installation instructions for those components. The manufacturer assumes no responsibility for equipment installed in violation of any code requirements. For other related equipment refer to the proper instructions.

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⚠ RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.

IMPORTANT NOTE TO THE OWNER
This equipment is to be serviced by professionally trained personnel only. If this equipment is improperly installed, adjusted or altered by an unqualified person, a safety hazard may result.

IMPORTANT NOTE TO THE SERVICER
Read this manual and familiarize yourself with the specific items which must be adhered to before attempting to service this unit. The precautions listed in this manual should not supersede existing practices but should be considered as supplemental information.

Your warranty certificate is also supplied with the unit. Read the warranty carefully and note what is covered. Keep the warranty certificate in a safe place, so you can find it, if necessary.

Before using this manual, check the serial plate for proper model identification.

THE INSTALLATION AND SERVICING OF THIS EQUIPMENT MUST BE PERFORMED BY QUALIFIED, EXPERIENCED TECHNICIANS ONLY.

Due to policy of continual product improvement, the right is reserved to change specifications and design without notice.

Unit Features

This unit has many features which are different than those found on conventional units. The servicer must be familiar with these features in order to properly service the unit.

- Random restart delay - The SPVU employs a random reset timer which delays unit operation up to 3 minutes following initial power application. Electronic thermostats may also employ internal reset timers which may further delay any changes which are made to the operation of the unit.
- Automatic 3-minute compressor lockout - After the compressor cycles off, it will not restart for three minutes. Additional delays may be experienced if using an electronic digital thermostat.
- Low ambient compressor lockout - When the outdoor ambient temperature is below 40 degrees F, the low ambient compressor lockout switch will keep the compressor from energizing in either cooling or heat pump mode.
- Direct drive, multi-speed blower - The proper speeds have been preset at the factory for heating and cooling. Refer to wiring diagram for recommended blower speeds for specific models.
- Condensate Drain - This unit comes with a factory installed drain tubing installed on the bottom of the unit. This tubing drains from a trap at the bottom of the condenser section.

Unit Location

Provisions should be made to allow access to the indoor side of the unit for installation and inspection. The closet or access panel opening must be centered with the exterior wall opening and at least 24" wide by 84" tall. Three (3) inches of unobstructed space is required on all sides of the SPVU to allow for adequate air flow. At least 27 inches of unobstructed space should be provided in front of the access door to permit removal of the unit should repair and inspection be required.

Transportation Damage

The SPVU is shipped in one package, completely assembled. Material in this shipment has been inspected at the factory and released to the transportation agency in good condition. When received, a visual inspection of all cartons should be made immediately. Any evidence of rough handling or apparent damage should be noted on the delivery receipt and the material inspected in the presence of the carrier's representative. If damage is found a claim should be filed against the carrier immediately.

In the event of damage, the consignee should:

1. Make notation on delivery receipt of any visible damage to shipment or container.
2. Notify carrier promptly and request an inspection.
3. In case of concealed damage, carrier must be notified as soon as possible—preferably within 5 days.
4. File the claim with the following supporting documents within the 6 month statute of limitations.
   a. Original Bill of Lading, certified copy, or indemnity bond.
   b. Original paid freight bill or indemnity in lieu thereof.
   c. Original invoice or certified copy thereof, showing trade and other discounts or reductions.
   d. Copy of the inspection report issued by carrier's representative at the time damage is reported to the carrier

The carrier is responsible for making prompt inspection of damage and for a thorough investigation of each claim. The distributor or manufacturer will not accept claims from dealers for transportation damage.

Unit Accessories

This unit is designed for through-the-wall installation in new or existing buildings. To complete the installation of this unit, a wall sleeve, an architectural grille, thermostat and a filter are required.

The unit is shipped in one carton. Optional accessories to complete a particular installation are the following:

Optional Accessories

Louvered Grille	Freeze Sensor
Non-Louvered Grille	Access Return Air Grille
60° Room Temperature Limiter	

NOTE: Consult sales literature for the appropriate voltage and amperage selections, if applicable.

Installation Instructions

To ensure that the unit operates safely and efficiently, it must be installed, operated and maintained according to these installation and operating instructions and all local codes and ordinances or, in their absence, with the latest edition of the National Electric Code. The proper installation of this unit is described in the following sections. Following the steps in the order presented should ensure proper installation.

PRE-INSTALLATION CONSIDERATIONS

- Ensure that properly sized duct work is in place to mate to the supply connection on the SPVU.
- Remove the two clips holding the unit to the shipping pallet and remove unit from the shipping pallet.
- Before setting unit into closet, remove upper side access panels and inspect the evaporator blower to ensure that the wheel turns freely without rubbing on the housing.
- Remove the styrofoam shipping block supporting the blower assembly and replace the upper access panels.
- Remove front access panel and remove packing and quick disconnect plug.
- Check all electrical connections and ensure the condenser fan turns freely. Note nameplate voltage, amperage and fuse size for proper power supply.
- If ducted return air is required, bend out the intake air flanges 90° away from the unit.
- A outdoor air vent panel is located on the lower left side unit. Remove one screw and rotate the plate to expose the desired amount of vent opening. Tighten the remaining screw. Place the removed screw in the open screw hole on the unit.

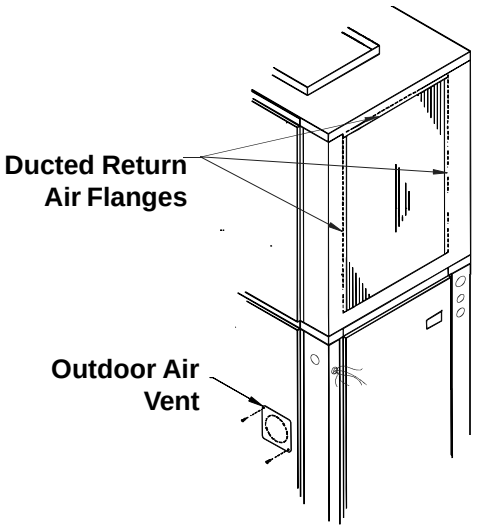

Figure 1

- Ensure that the wall sleeve is installed squarely and is secure before installing the unit.
- Ensure the sleeve seal on the wall sleeve is properly secured and aligned.
- Ensure the architectural or outdoor grille is installed.
- Ensure a minimum clearance of three (3) inches around the unit for adequate airflow.
- Ensure the condensate drain is unobstructed and leak-free.

NOTE: The wall sleeve has a 3/4 NPT nipple located in the bottom for connection to the drain. A trap may be required in the condensate drain line to prevent sewer gas from escaping into the room.

SLEEVE INSTALLATION

Refer to installation instructions packed with wall sleeve to assemble and mount it in the wall. Ensure that the construction debris guard is removed and that the bottom of the wall sleeve is pitched 1/2 bubble toward the outside of the building. This angle forces any rain water that might enter to drain to the outside. Also inspect the bottom of the wall sleeve pan and drain. They should be clear of obstruction and operational.

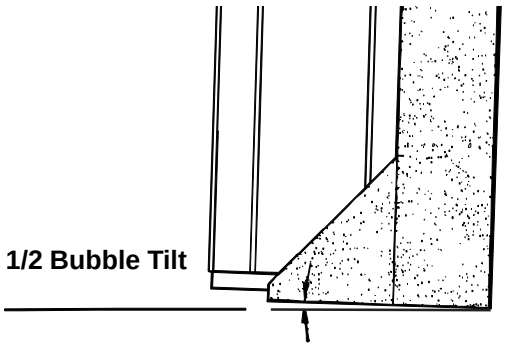

Figure 2

ARCHITECTURAL GRILLE

This model requires an Architectural Grille. It must be installed before installing the unit.

The architectural grille directs air flow for proper unit operation and protects the outdoor coil. Refer to the Installation Instructions supplied with the architectural outdoor grille kit for a complete description of the installation procedure.

UNIT INSTALLATION

1. Lift the unit onto the base of the sleeve and slide the unit forward until it is 1/2" away from the top inside edge of the sleeve to engage the seal. Ensure the unit is completely seated on all four sides against the wall sleeve seals.

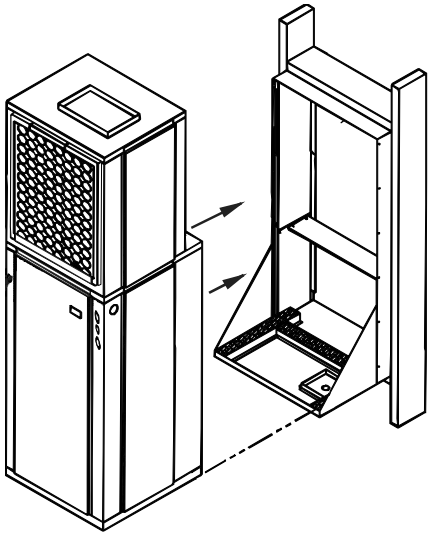

Figure 3

2. Connect properly sized electrical service to the quick disconnect.
3. Seal any openings that may exist. If the unit is not completely sealed, water and/or outside air could infiltrate the closet and cause the unit to malfunction.
4. Install ductwork onto unit discharge and ensure that the connection is leak free. A flexible boot connection may be desirable to provide for more convenient installation and removal from the unit.

IMPORTANT NOTE: Check the indoor and outdoor grilles for obstructions to air flow. The unit must be located where curtains, furniture, trees, or other objects cannot block the air flow to and from the unit. If air is obstructed and/or deflected back into the unit, the air conditioner's compressor may cycle on and off rapidly. This could damage the compressor.

INTAKE AIR FILTER INSTALLATION

An intake air filter is required for this unit. Do not use pleated or media filters. Do not operate the unit without one. An intake air filter, filter bracket and clip are shipped with the unit to complete this installation.

1. Before installing the intake air filter, insert the filter bracket into the slots below the evaporator. Install the filter clip into the slots above the evaporator.
2. Place a 20" x 24" x 1" filter into the filter bracket and tilt outwards.
3. At the same time, tilt up the filter clip, place the filter against the unit and then lower the filter clip. It should hook over the filter.

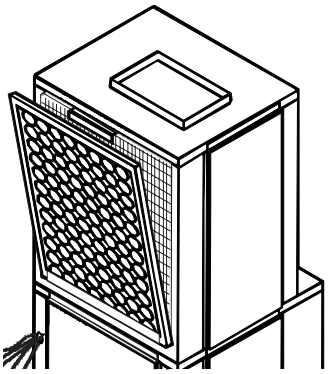

Figure 4

Wiring

⚠ WARNING

To avoid the risk of electrical shock, personal injury or death, do not service this unit without first opening all disconnects.

⚠ CAUTION

To avoid the risk of fire, property damage or personal injury use only copper conductors.

⚠ WARNING

This air conditioner is not meant to provide unattended cooling or life support for persons or animals who are unable to react to the failure of this product.

The failure of an unattended air conditioner may result in extreme heat in the conditioned space causing overheating or death of persons or animals.

Precautions must be taken to warn of or guard against such an occurrence.

All wiring must comply with local and national code requirements. Any alteration of the internal wiring will void UL certification and manufacturer's warranty.

Nameplate data indicates the operating voltage, phase, ampacity, maximum over current protection and minimum voltage. Units must never be installed or operated where voltage exceeds the nameplate voltage by more than 10%. Failure of the compressor as a result of operation with improper voltage voids the compressor replacement warranty.

The unit comes with a factory-supplied quick disconnect, however, the contractor is responsible for providing over current protection on the branch circuit. Refer to the unit wiring diagram for single point electrical connection.

These units are provided with a Class 2 transformer for 24 volt control circuits. Should any add-on equipment also have a Class 2 transformer furnished, care must be taken to prevent interconnecting outputs of the two transformers by using a thermostat with isolating contacts.

THERMOSTAT INSTALLATION

Install a factory approved or equivalent thermostat according to directions furnished with the thermostat. The thermostat should be located on an inside wall where it cannot be affected by drafts, sunlight or any other heat producing appliances.

NOTE: Heat Pump units operate with the reversing valve energized in the HEATING mode. The thermostat must be wired or configured accordingly or the unit will not operate properly.

1. Connect thermostat wires to the thermostat following the wiring diagram attached to the unit.
2. Connect low voltage thermostat wires from remote thermostat to the unit.

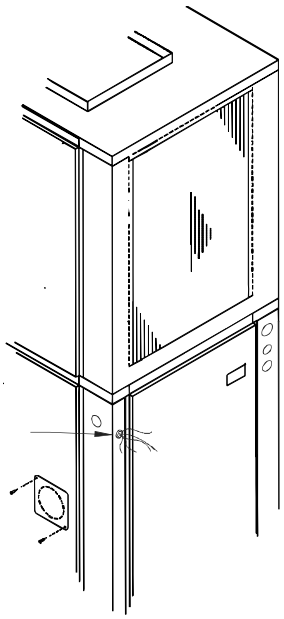

Figure 6

Operating Instructions

Operation of the unit is automatic and will provide heating and cooling depending on the setting of the thermostat.

This unit must not be operated during building constructions due to excessive airborne dust and debris. The unit must not be operated under any circumstances without an air filter in place.

⚠ WARNING

To prevent death or personal injury due to electrical shock, turn off power at the fuse box or circuit breaker before servicing the unit. Line voltage will be present at the control board, terminals L1 and L2, whenever power is applied to the unit.

System Checks

COOLING/ELECTRIC HEAT UNITS

POINT CHECK	ACTION
Set thermostat system switch to OFF position.	None. Unit does not come on.
Set fan switch to ON.	Indoor blower operates after random reset timer cycle is complete.
Set fan switch to AUTO	Indoor blower de-energizes.
Set system switch to COOL and lower thermostat set point to coldest setting.	The compressor, outdoor fan, and indoor blower energizes after a 5-minute startup delay.
Set thermostat set point to a temperature warmer than current room temperature.	The compressor and outdoor fan de-energizes. The indoor blower remains operational for an additional 45 seconds, then de-energizes.
Move system switch to HEAT. Raise thermostat set point to a temperature warmer than current room temperature.	The indoor blower and electric heating elements energize.
Return system switch to OFF position.	Unit de-energizes. System check is complete.

HEAT PUMP UNITS

POINT CHECK	ACTION
Set thermostat system switch to OFF position.	None. Unit does not come on.
Set fan switch to ON.	Indoor blower operates after random reset timer cycle is complete.
Set fan switch to AUTO	Indoor blower de-energizes.
Set system switch to COOL and lower thermostat set point to coldest setting.	The compressor, outdoor fan, and indoor blower energizes.
Set thermostat set point to a temperature warmer than current room termperature.	The compressor and outdoor fan de-energizes. The indoor blower remains operational for an additional 45 seconds, then de-energizes.
Move system switch to HEAT. Raise thermostat set point to a temperature slightly higher (less than 2 degrees) than current room temperature.	The compressor, reversing valve, outdoor fan, and indoor blower energizes.
Raise set point to more than 2 degrees.	Electric heaters energize. Determine by attaching an amp meter to the electric supply and reading the increased amperage.
Lower set point to less than room temperature.	Unit de-energizes.
Return system switch to OFF position.	Unit de-energizes. System check is complete.

If any of these checks fail, contact an authorized servicer.

Care and Cleaning

PERIODIC MAINTENANCE

Clean the outdoor coil of foreign material such as lint, dust, leaves or other obstructions as necessary.

Check drain line and removing obstructions as necessary.

If servicing or major repairs are required, the complete unit can be removed as follows:

1. Disconnect the electrical power circuit supplying the unit.
2. Remove Quick Disconnect and low voltage thermostat connection.
3. Remove rear access panel.
4. Remove supply duct from top of unit.
5. Slide unit out of sleeve and closet.

Reverse this procedure to reinstall the unit.

INTAKE AIR FILTER

The intake air filter is disposable. It should be changed monthly during the heating and cooling seasons or more frequently if unusual conditions are encountered. To replace the filter, check with your local dealer.

To remove the filter:

1. Turn the unit OFF.
2. Lift up the filter clip with one hand and tilt out the filter with the other.

Reverse this procedure to reinstall the filter.

COMPRESSOR

The compressor is hermetically sealed, permanently lubricated and requires no additional oiling. If vibration noise is a problem, loosen the compressor mounting nuts until vibration stops. Be sure nuts still secure the compressor to the mounting plate.

Obtaining Service

In the unlikely event this unit requires repair or servicing beyond what is covered in this manual, contact an authorized service organization.

To obtain an authorized servicer, contact your sales representative or agency.

Wiring Diagram